

CHERNYAYEV, I.I.; ZHELIGOVSKAYA, N.N.; TSINGISTER, V.A.

Trans effect of the hydroxyl group in isomeric diamminodibromedi-  
hydroxy compounds of tetravalent platinum. Zhur. neorg. khim.  
5 no. 12:2690-2699 D '60. (MIRA 13:12)

(Platinum compounds) (Hydroxyl group)

5.2400 (B)

68613

5(2)

AUTHORS:

Chernyayev, I. I. Academician,  
Nikolayev, N. S., Ippolitov, Ye. G.

S/020/60/130/05/024/061  
B011/B005

TITLE:

New Methods of Preparing Hexafluoroplatinates <sup>7</sup>

PERIODICAL:

Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 5, pp 1041 -1043  
(USSR)

ABSTRACT:

By the methods used hitherto, hexafluoroplatinates <sup>21</sup> could not be prepared in aqueous solution since they hydrolyze irreversibly. The authors found that a mixture of bromine with bromopentafluoride dissolves metallic platinum rather quickly (pure  $\text{BrF}_5$  does not act on platinum). A dark-yellow crystalline compound  $\text{PtBr}_2\text{F}_{10}$  was obtained by evaporating the solution. This salt is instantaneously hydrolyzed by water forming bromine vapors. It is insoluble in hydrogen fluoride, inflames on contact with alcohol, and does not react with  $\text{CCl}_4$ .  $\text{PtBr}_2\text{F}_{10}$  is well soluble in  $\text{BrF}_3$ . When potassium fluoride is added to the resulting clear red solution and the solvent is removed under vacuum at room temperature,  $\text{K}_2\text{PtF}_6 \cdot 1.1 \text{ BrF}_3$  remains <sup>4</sup>

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## New Methods of Preparing Hexafluoroplatinates

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behind as a light-yellow residue. This salt decomposes in vacuum at  $250^{\circ}$  liberating  $\text{BrF}_3$ . After leaching the residue with hot water and filtering the solution, lemon-yellow crystals of potassiumhexafluoroplatinate were obtained from the latter. The preparation of this salt according to the equation:  $(\text{BrF}_2)\text{PtF}_6 + 4\text{KF} = \text{K}_2\text{PtF}_6 + 2\text{KBrF}_4$  gives good yields (90%). A preparation method is given in the experimental part. The substance obtained was analyzed. Table 1 shows the results. Subsequently, results obtained by other analytical methods are given. The analytical results show that 4 of 6 fluorine atoms are separated by pyrohydrolysis. This offers an additional proof that fluorine is not substituted by the  $\text{OH}^-$  or  $\text{H}_2\text{O}$  groups. Aspect and properties of the potassiumhexafluoroplatinate were in exact agreement with the data found in publications. The density of the salt was  $4.81 \pm 0.01 \text{ g/cm}^3$ . The dissolution of platinum in the mixture of bromine with bromopentafluoride is explained by the formation of monobromofluoride in the mixture which corrodes platinum rather quickly. The authors found that

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$\text{BrF}_3$  is formed besides the difluorobromoniumhexafluoro-  
platinate (see Schemes (1), (2)). According to the analytical  
data, the summary equation  $\text{Br}_2 + 5\text{BrF}_5 + \text{Pt} = (\text{BrF}_2)_2\text{PtF}_6 +$   
 $+ 5\text{BrF}_3$  corresponds to the reaction products obtained by the  
authors. V. A. Golovnya, and S.K. Sokol are mentioned in the  
paper. There are 1 table and 14 references, 4 of which are  
Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova  
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USSR)

SUBMITTED: October 14, 1959

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80488  
S/020/60/132/02/37/067  
B011/B002

5.2400 (B)  
AUTHORS: Chernyayev, I. I., Academician, Nikolayev, N. S., Ippolitov, Ye. G.  
TITLE: New Methods of Producing Hexafluoro Platinates. Fluorination by Chlorotrifluoride

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 2, pp. 378-379

TEXT: Since chlorotrifluoride is the most active fluorinating agent among all fluorine compounds and does not develop by-products during fluorination, the authors investigated its action on a platinum - potassium bifluoride mixture. The present paper is the continuation of a former one (Ref. 1) and its purpose is the development of a better method of producing potassium hexafluoro platinum. The authors found out that platinum in the above mixture (5 g of platinum black, 3 g of potassium bifluoride) is completely transformed into potassium hexafluoro platinate after being heated up to 200° in a nickel boat in the chlorotrifluoride current. The product is separated from the potassium bifluoride excess by means of recrystallization in hot water. The conversion of potassium hexachloro platinate in potassium hexafluoro platinate by means of chlorotrifluoride showed even better results. This process, however, must take place at 500° with

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New Methods of Producing Hexafluoro Platinates.  
Fluorination by Chlorotrifluoride

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B011/B002

gaseous  $\text{ClF}_3$  (reaction (1)). This process stretches over approximately 1.5 h. The boat can only be removed from the quartz tube in which the experiment was conducted, after it has been cooled down, otherwise  $\text{K}_2\text{PtF}_6$  would react with the atmospheric moisture. The crystals obtained by recrystallization in water were completely identical with those obtained after the process at  $200^\circ$ . The authors developed a method for the analysis of  $\text{K}_2\text{PtF}_6$  by means of the pyrohydrolysis of the weighed portion with overheated vapor (Ref. 1). This method however, was too time-consuming. Therefore they suggest another method: a weighed portion of salt of 0.2-0.4 g is mixed in the platinum boat with 1 g of calcined soda and covered by a soda layer. For 15-20 min. the boat is heated in the quartz tube in the  $\text{H}_2$  current up to  $400^\circ$ . The loss in weight was determined after the boat had been cooled down. It was in agreement with the equation (see Equation). After the sample was leached on a filter by hot water, the platinum residue was annealed on the filter and weighed. In the filtrate, fluorine was determined as  $\text{PbClF}$ , and potassium as  $\text{K}_2\text{PtCl}_6$ . The analysis did not take more than one day. The density of the synthesized preparation was  $4.79 \text{ g/cm}^3$  (in publications it is  $4.83 \text{ g/cm}^3$ ). Experiments with gaseous fluorine under the same conditions showed that  $\text{K}_2\text{PtCl}_6$  is transformed into potassium hexafluoro platinate. Its yield however, is much lower and requires purification by recrystallization. There are

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New Methods of Producing Hexafluoro Platinates.  
Fluorination by Chlorotrifluoride

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2 references, 1 of which is Soviet.

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imeni N. S. Kurnakov of the Academy of Sciences, USSR) ✓

SUBMITTED: January 30, 1960

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GOLOVNYA, Valentina Arkad'yevna; FEDOROV, Igor' Alekseyevich; CHERNYAYEV,  
I.I., akademik, otv. red.; DRAGUNOV, E.S., red. izd-va; YEGOROVA,  
N.F., tekhn. red.

[Basic principles of the chemistry of complex compounds] Osnovnye  
poniatiia khimii kompleksnykh soedinenii. Moskva, Izd-vo Akad. nauk  
SSSR, 1961. 133 p. (MIRA 14:11)

(Complex compounds)



CHERNYAYEV, I.I.; ADRIANOVA, O.N.

Optical activity of the triamines  $\text{EnNH}_2\text{NO}_2\text{ClPtCl}$  and  $\text{EnCH}_3\text{NH}_2\text{NO}_2\text{ClPtCl}$ .  
Zhur. neorg. khim. 6 no.1:34-43 '61. 3<sup>2</sup> (MLA 2:14:2)<sup>2</sup>  
(Platinum compounds--Optical properties)

CHERNYAYEV, I.I.; ZHELIGOVSKAYA, N.N.; BABKOV, A.V.

Some properties of the nitro group in complex compounds of tetravalent  
platinum. Zhur. neorg. khim. 6 no.1:54-60 '61. (MIRA 14:2)  
(Platinum compounds) (Nitro group)

CHERNYAYEV, I.I.; KUZNETSOV, I.T.

Mixed platinum penicillins. Zhur. neorg. khim. 6 no.1:91-93 '61.  
(MLA 14:2)

1. Institut obshchey i neorganicheskoy khimii N.S. Kurnakova  
Akademii nauk SSSR.

(Platinum compounds)

CHERNYAYEV, I.I.; KUZNETSOV, N.T.

Acid-base properties of some tetramines of platinum(IV). Zhur.  
neorg. khim. 6 no.1:81-89 '61. (MIRA 14:2)

1. Institut obshchey i neorganicheskoy khimii im. N.S. Kurnakova  
Akademii nauk SSSR.  
(Platinum compounds)

88603

21.3100

S/078/61/006/002/007/017  
B017/B054

AUTHORS: Chernyayev, I. I., Golovnya, V. A., Ellert, G. V.

TITLE: Synthesis of Monocarbonate Complexes of the Type  
 $M^{+}[UO_2(OH)CO_3(H_2O)_3]$

PERIODICAL: Zhurnal neorganicheskoy khimii, 1961, Vol. 6, No. 2,  
pp. 376 - 385

TEXT: The authors synthesized the following uranyl monocarbonate hydroxo triaquo complexes and determined their compositions:

$NH_4[UO_2(OH)CO_3(H_2O)_3]$ ,  $Tl[UO_2(OH)CO_3(H_2O)_3]$ ,  $Ag[UO_2(OH)CO_3(H_2O)_3]$ , and  $Ba[UO_2(OH)CO_3(H_2O)_3]$ . The stability of the ammonium, sodium, and potassium

tricarboxate uranyl compounds was studied by varying the pH. The aqueous solutions of the ammonium uranyl tricarboxate complex show the highest stability to hydrolysis. Optimum production conditions for  $[UO_2(OH)CO_3(H_2O)_3]$

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Synthesis of Monocarbonate Complexes of the  
Type  $Me^+ [UO_2(OH)CO_3(H_2O)_3]$

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are: reaction of a solution of uranyl nitrate containing 160 - 200 g/l of uranium with 330 g/l of  $(NH_4)_2CO_3$  (ratio 1:5 - 1:7), filtering off, and elution of the precipitate with ethanol and ether. This compound has a greenish-yellow color. The uranium quantity in the precipitate as a function of the concentration of the initial uranyl nitrate solutions was studied, results are given in Table 1. Most convenient is the work with a ~~uranium~~ solution. Tables 2 - 5 give the analytical results of the ammonium, barium, silver, and thallium uranyl monocarbonate complexes. Thermograms of the ammonium, barium, and thallium compounds are shown in Figs. 2 - 5. X-ray studies carried out by Z. V. Popova confirmed the existence of these compounds. The principal results of this investigation were reported to the 2nd International UNO Conference on the Peaceful Use of Atomic Energy. There are 6 figures, 11 tables, and 5 references: 2 Soviet, 1 Indian, 1 French, and 1 Canadian.

SUBMITTED: November 14, 1959

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08604

21.3100

S/078/61/006/002/008/017  
B017/B054

AUTHORS: Chernyayev, I. I., Golovnya, V. A., Ellert, G. V.

TITLE: Synthesis of Compounds of the Type  
 $\text{Me}_3^+[(\text{UO}_2)_2(\text{OH})(\text{CO}_3)_3(\text{H}_2\text{O})_5]$

PERIODICAL: Zhurnal neorganicheskoy khimii, 1961, Vol. 6, No. 2,  
pp. 386 - 393

TEXT: By potentiometric titration of solutions of ammonium uranyl tri-carbonate with Hydrochloric acid and uranyl nitrate, the authors proved the existence of complex compounds with a molar ratio of

$\text{U} : \text{CO}_3 = 1 : 2.5, 1 : 2.0, 1 : 1.5, \text{ and } 1 : 1.$

$(\text{NH}_4)_3[(\text{UO}_2)_2(\text{OH})(\text{CO}_3)_3(\text{H}_2\text{O})_5]$  and the following salts of this compound were synthesized:  $\text{Ag}_3[(\text{UO}_2)_2(\text{OH})(\text{CO}_3)_3(\text{H}_2\text{O})_5]$ ,  $\text{Tl}_3[(\text{UO}_2)_2(\text{OH})(\text{CO}_3)_3(\text{H}_2\text{O})_5]$  and  $\text{Ba}_3[(\text{UO}_2)_2(\text{OH})(\text{CO}_3)_3(\text{H}_2\text{O})_5]_2 \cdot 4\text{H}_2\text{O}$ . Fig. 1 shows the potentiometric  
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Synthesis of Compounds of the Type  
 $\text{Me}_3^+ [(\text{UO}_2)_2(\text{OH})(\text{CO}_3)_3(\text{H}_2\text{O})_5]$

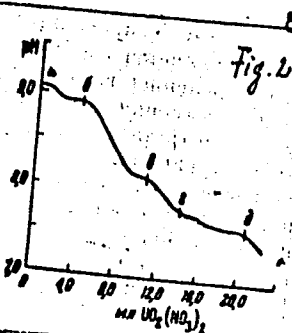
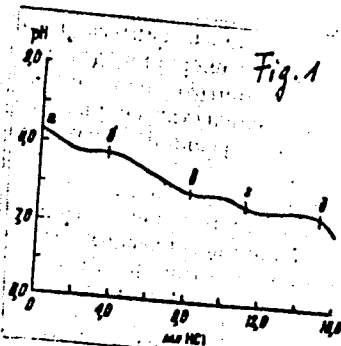
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titration curve of a 0.02 molar solution of ammonium uranyl tricarbonate with 0.1 molar hydrochloric acid, and Fig. 2 the potentiometric titration curve with uranyl nitrate. All these compounds are decomposable with acids. The ammonium compound is soluble in solutions of alkali carbonates or ammonium with formation of complexes of the type  $\text{Me}_4 [\text{UO}_2(\text{CO}_3)_3]$ . X-ray studies confirmed the existence of these compounds. X-ray pictures are given in Fig. 6, intensities and lattice spacings (d) in Tables 5 (ammonium compound), 6 (barium compound), and 7 (thallium compound). The principal results of this investigation were reported to the 2nd International UNO Conference on the Peaceful Use of Atomic Energy. There are 7 figures, 6 tables, and 2 Soviet references.

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SUBMITTED: November 14, 1959  
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Таблица 5

I	d	I	d	I	d	I	d
1	6,61	3	1,70	2	2,51	1	1,20
2	6,17	1	1,66	1	2,39	1	1,16
2	5,69	1	1,61	3	2,31	1	1,12
3	5,35	1	1,54	1	2,17	1	1,093
3	4,53	1	1,52	3	2,06	1	1,065
2	4,12	1	1,47	1	2,01	1	1,024
1	4,01	1	1,44	2	1,95	1	1,002
1	3,62	1	1,38	1	1,89	1	0,977
3	3,35	1	1,36	1	1,86	1	0,955
3	3,19	1	1,32	1	1,80	1	0,932
3	2,89	1	1,28	2	1,76	1	0,909
1	2,79	1	1,23			1	0,874

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Таблица 6

I	4	3	1	1	1	1
d	4,97	3,77	3,46	2,20	1,93	1,33

Таблица 7

I	d	I	d	I	d	I	d
1	4,72	2	2,70	1	1,93	1	1,33
2	3,50	1	2,51	2	1,78	1	1,27
1	3,42	2	2,87	1	1,74	1	1,26
4	3,26	2	2,20	1	1,59	1	1,19
2	2,80	3	2,08	1	1,56	1	1,17
1	2,81	2	2,02	1	1,37		

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88605

5.3700

S/078/61/006/002/009/017  
B017/B054

AUTHORS: Chernyayev, I. I., Golovnya, V. A., Molodkin, A. K.

TITLE: Ammonium Thorium Pentacarbonate

PERIODICAL: Zhurnal neorganicheskoy khimii, 1961, Vol. 6, No. 2,  
pp. 394 - 399

TEXT: The authors studied the synthesis and some properties of ammonium thorium pentacarbonate  $(\text{NH}_4)_6\text{Th}(\text{CO}_3)_5 \cdot \text{H}_2\text{O}$ . The existence of this compound was confirmed by ion exchange reactions with thallium, hexammine cobalt chloride, and guanidine. The following compounds were formed:  $\text{Tl}_6\text{Th}(\text{CO}_3)_5 \cdot \text{H}_2\text{O}$ ,  $[\text{Co}(\text{NH}_3)_6]\text{Th}(\text{CO}_3)_5(3+m)\text{H}_2\text{O}$ , and  $(\text{CN}_3\text{H}_6)_3(\text{NH}_4)_3\text{Th}(\text{CO}_3)_5 \cdot 3\text{H}_2\text{O}$ . The compound  $(\text{NH}_4)_6\text{Th}(\text{CO}_3)_5 \cdot 3\text{H}_2\text{O}$  is very unstable, and decomposes in air yielding ammonia, carbon dioxide, and water. The composition of this compound after one week of storing in air is given in a table. The stability of thorium pentacarbonate complexes of the type  $\text{Me}_6\text{Th}(\text{CO}_3)_6 \cdot n\text{H}_2\text{O}$

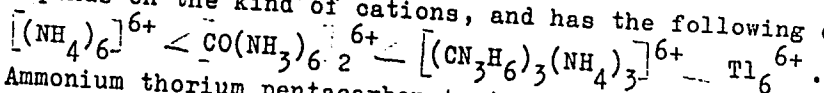
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Ammonium Thorium Pentacarbonate

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depends on the kind of cations, and has the following order:



Ammonium thorium pentacarbonate is soluble in water with simultaneous hydrolysis. In mineral acids, it decomposes and yields  $\text{CO}_2$ . The compound is soluble in saturated alkali carbonate solutions, ammonia, guanidine, and alkaline metal halide solutions. This effect indicates the possibility of an existence of higher thorium carbonate complexes or carbonate compounds of polymeric character. Ammonium thorium pentacarbonate is insoluble in organic solvents such as ethanol, ethyl ether, acetone, benzene, toluene, etc. There are 5 figures, 1 table, and 42 references: 13 Soviet, 6 US, 12 German, 5 British, 1 Italian, 3 French, and 1 Indian.

SUBMITTED: December 3, 1959

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S/078/61/006/003/007/022  
B121/B208

AUTHORS: Chernyayev, I. I., Golovnya, V. A., Shchelokov, R. N.  
TITLE: Complexes of aquo-carbonato-oxalate compounds of uranyl  
PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 3, 1961, 549-556

TEXT: The chemical behavior of carbonates and oxalates of uranyl was discussed, and the possible exchange reactions of the oxalate ion for the carbonate ion were outlined. Potentiometric titration of uranyl oxalate solutions with alkali- and ammonium carbonate solutions disclosed that the displacement of the oxalate ion by the carbonate ion takes place gradually under the formation of mixed carbonato-oxalate compounds of uranyl as intermediates. Mixed carbonato-oxalate compounds with molar ratios of the components of 1 : 1 and 2 : 1 were produced. Ammonium, sodium, potassium, and barium compounds of the carbonato-oxalate complex of uranyl were synthesized, and their chemical and physical properties studied.

$(\text{NH}_4)_2[\text{UO}_2(\text{CO}_3)(\text{C}_2\text{O}_4)(\text{H}_2\text{O})_2]$  is obtained by dissolving uranyl oxalate in 10% ammonium carbonate solution. The complex is precipitated with 5-6 times

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the amount of alcohol and ether. The resultant compound is a fine-crystalline yellow powder, easily soluble in water, which in solid state partly decomposes in the air. Its solubility is 21.0 referred to uranium, and 43.2 wt% referred to the salt at 20 - 23°C.  $\text{Na}_2[\text{UO}_2(\text{CO}_3)(\text{C}_2\text{O}_4)(\text{H}_2\text{O})_2] \cdot \text{H}_2\text{O}$  was obtained by slow addition of a 10% sodium carbonate solution to uranyl oxalate under thorough mixing up to a molar ratio of the components of 1:1. The compound was precipitated with a six-fold excess of alcohol. This compound is unstable when stored, and decomposes on exposure to light to give dark reaction products.  $\text{K}_2[\text{UO}_2(\text{CO}_3)(\text{C}_2\text{O}_4)(\text{H}_2\text{O})_2]$  was produced in a similar way. This compound is easily soluble in water, and gives a yellow-green solution. By determining the pH and the molecular electrical conductivity, these compounds were found to dissociate in water into 3 ions.  $\text{Ba}[\text{UO}_2(\text{CO}_3)(\text{C}_2\text{O}_4)(\text{H}_2\text{O})_2]$  was obtained by reacting  $(\text{NH}_4)_2[\text{UO}_2(\text{CO}_3)(\text{C}_2\text{O}_4)(\text{H}_2\text{O})_2]$  with a barium chloride solution and by subsequent precipitation of the compound with alcohol and ether. The compound crystallizes as a fine-crystalline, light yellow powder, and is soluble in water to a very low extent. The resultant salts of diaquo-carbonato-oxalate compounds of uranyl are to

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be regarded as derivatives of the transition type between aquo-carbonate and aquo-oxalate compounds of uranyl. A relation was established between the genetic series of carbonate, oxalate, and sulfate compounds of uranyl. There are 6 tables and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc.

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SUBMITTED: February 8, 1960

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S/078/61/006/003/008/022  
B121/B208

AUTHORS: Chernyayev, I. I., Shchelokov, R. N.

TITLE: Complexes of aquo-fluoro-oxalate compounds of uranyl of the aquo-pentaacido series

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 3, 1961, 557-565

TEXT: The synthesis of mixed aquo-carbonato-oxalate and aquo-oxalato-sulfate complex compounds of uranyl has been described by I. I. Chernyayev and co-workers (Refs. 1-3). The present paper reports on the synthesis of mixed aquo-fluoro-oxalate complex compounds of uranyl of the aquo-pentaacido series. Complex compounds with the anion  $[UO_2F_3(C_2O_4)(H_2O)]^{5-}$  were found to be formed in the reaction of NaF with uranyl monooxalate at a molar ratio of the components  $UO_2C_2O_4 : NaF = 1 : 1$  and  $1 : 3$ . The interchange of the addenda  $CO_3^{2-}$ ,  $C_2O_4^{2-}$ , and  $F^-$  in complex compounds of uranyl was studied, and the displacing ability of the above-mentioned anions was found to be arranged in the following order:  $CO_3^{2-} \rightarrow F^- \rightarrow C_2O_4^{2-} \rightarrow SO_4^{2-}$ . The following com-

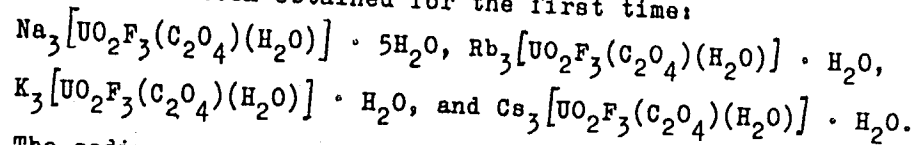
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pounds have been obtained for the first time:



The sodium compound was synthesized in the following way: Solid NaF was added to solid  $\text{UO}_2\text{C}_2\text{O}_4 \cdot 3\text{H}_2\text{O}$  up to a molar ratio of 1 : 1, the mixture was thoroughly stirred and dissolved in water, and the solution with the precipitate was heated up to boiling. The insoluble residue was filtered off, and the salt was crystallized in vacuo from the solution. It was easily soluble in water, and the aqueous solutions were stable even at elevated temperatures. The trifluoro-oxalato-aquo-uranyl compounds of potassium, rubidium, and cesium were prepared in a similar way. By determining the molecular electrical conductivity and the pH of the solutions, these compounds were found to dissociate into four ions when dissolved in an aqueous solution. A synthesis of the ammonium compound was not possible. The following fluoro-dioxalate compounds of uranyl of the aquo-pentaacido series was synthesized:

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$(\text{CN}_3\text{H}_6)_3[\text{UO}_2\text{F}(\text{C}_2\text{O}_4)_2(\text{H}_2\text{O})]$  (large prismatic crystals, stable on the air, well soluble in water),  $\text{K}_3[\text{UO}_2\text{F}(\text{C}_2\text{O}_4)_2(\text{H}_2\text{O})] \cdot 2\text{H}_2\text{O}$  and  $(\text{NH}_4)_3[\text{UO}_2\text{F}(\text{C}_2\text{O}_4)_2(\text{H}_2\text{O})]$ . The potassium complex was obtained by mixing the dry initial compounds  $\text{UO}_2\text{C}_2\text{O}_4 \cdot 3\text{H}_2\text{O}$ ,  $\text{K}_2\text{C}_2\text{O}_4 \cdot \text{H}_2\text{O}$ , and  $\text{KF} \cdot 2\text{H}_2\text{O}$  in a molar ratio of 1 : 1 : 1, by subsequent intense stirring, by extraction with water, and by crystallization in vacuo. It was washed out with water, then with alcohol and ether. The complex character of the resultant compounds was confirmed by determining the molecular electrical conductivity and the pH of the aqueous solutions. In an aqueous solution, these compounds dissociate also into four ions. The ammonium salt of fluoro-dioxalato-aquo-uranyl was obtained by reaction of ammonium fluoride with an aqueous solution of ammonium dioxalato-diaquo-uranyl, and isolated in the form of square platelets. The compound is easily soluble in water and rapidly disintegrates on exposure to air. Chemical analysis of the freshly prepared crystals gave the composition  $(\text{NH}_4)_3[\text{UO}_2\text{F}(\text{C}_2\text{O}_4)_2(\text{H}_2\text{O})]$ . There are 6 tables and 3 Soviet-bloc references. ✓

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Complexes of ...

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ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S.  
Kurnakova Akademii nauk SSSR (Institute of General and  
Inorganic Chemistry imeni N. S. Kurnakov, Academy of  
Sciences USSR)

SUBMITTED: February 8, 1960

Card 4/4

89902

21.3100

S/078/61/006/003/011/022  
B121/B208

AUTHORS: Chernyayev, I. I., Molodkin, A. K.

TITLE: Guanidine thorium pentacarbonate  $(\text{CN}_3\text{H}_6)_6\text{Th}(\text{CO}_3)_5 \cdot n\text{H}_2\text{O}$

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 3, 1961, 587-592

TEXT: The authors continued their previous studies (Refs. 1 and 2) on thorium pentacarbonates. New syntheses of the tri- and tetrahydrates of guanidine thorium pentacarbonate were devised and the properties of the compounds studied. Compound  $(\text{CN}_3\text{H}_6)_6\text{Th}(\text{CO}_3)_5 \cdot 4\text{H}_2\text{O}$  was obtained in different crystal forms, e. g., prisms, bipyramids, and in the form of a fine powder, depending on the reaction time by adding freshly precipitated thorium hydroxide which was dissolved in saturated guanidine carbonate solution to a saturated solution of sodium carbonate.  $(\text{CN}_3\text{H}_6)_6\text{Th}(\text{CO}_3)_5 \cdot 4\text{H}_2\text{O}$  was also obtained by direct reaction of thorium nitrate with a guanidine carbonate solution. The refractive indices of this compound are  $n_p = 1.539$  and  $n_g = 1.583$ . The trihydrate of guanidine thorium pentacarbonate was obtained from

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89902

S/078/61/006/003/011/022  
B121/B208

Guanidine thorium ...

1 M thorium nitrate solution and 7.65 M saturated guanidine carbonate solution in the form of crystal platelets, whose analysis gave the following composition:  $(\text{CN}_3\text{H}_6)_6\text{Th}(\text{CO}_3)_5 \cdot 3\text{H}_2\text{O}$ . The refractive indices are  $n_g = 1.583$  and  $n_p = 1.530$ . Guanidine thorium pentacarbonate may also be produced by dissolving thorium oxalate in guanidine carbonate and by subsequent crystallization. According to the operational conditions, either large crystals or a fine powder are obtained. Guanidine thorium pentacarbonate is stable on the air, and only on prolonged exposure to air the crystals disintegrate under separation of water. The water is completely expelled by heating to  $50 - 80^\circ\text{C}$ , and  $(\text{CN}_3\text{H}_6)_6\text{Th}(\text{CO}_3)_5$  is obtained. It may be seen from the heating curves that one water molecule in the tetrahydrate of guanidine thorium pentacarbonate is included into the inner sphere of the complex, and that, accordingly, the latter has the following formula:  $(\text{CN}_3\text{H}_6)_6[\text{Th}(\text{CO}_3)_5 \cdot \text{H}_2\text{O}] \cdot 3\text{H}_2\text{O}$ . The thermal decomposition of various hydrates of guanidine thorium pentacarbonate thus takes place in the same way. Complete decomposition of the compounds occurs at  $180 - 230^\circ\text{C}$ . Some chemical properties of guanidine thorium pentacarbonate hydrates were

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89902

Guanidine thorium ...

S/078/61/006/003/011/022  
B121/B208

studied. These compounds were found to hydrolyze readily in water. Mineral acids cause decomposition with carbon dioxide liberation. They are insoluble in organic solvents, but soluble in saturated guanidine carbonate solution, particularly when heated. These compounds are also soluble in solutions of carbonates, oxalates, and halides of alkali metals and ammonium, as well as in urea solutions, forming complex compounds of the hexacarbonate type. Thorium hexacarbonate complexes of the  $\text{Me}_8\text{Th}(\text{CO}_3)_6 \cdot n\text{H}_2\text{O}$  type could not be isolated. It is assumed that the guanidine thorium hexacarbonate formed in the solution is decomposed and converted to the more stable guanidine thorium pentacarbonate complex. The crystal lattice of the tetrahydrate of guanidine thorium pentacarbonate is symmetric and does not show any piezoeffect. There are 4 figures and 13 references: 3 Soviet-bloc and 10 non-Soviet-bloc.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii Akademii nauk SSSR  
(Institute of General and Inorganic Chemistry, Academy of  
Sciences USSR)

SUBMITTED: January 22, 1960

Card 3/3

21336  
S/078/61/006/004/007/018  
B121/B216

21.3100

AUTHORS: Chernyayev, I. I., Golovnya, V. A., and Ellert, G. V.

TITLE: The complex nature of peroxy-uranyl compounds

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 4, 1961, 790-798

TEXT: The present work systematizes the peroxy-uranyl compounds, so-called peruranates, in the light of the coordination theory. A survey is given of the publications on peroxy-uranyl compounds, among others, by Ye. V. Komarov et al. The peroxy-uranyl compounds are regarded as complex compounds in which the peroxy group  $(OO)^{2-}$  occupies a ligand position. According to its displacement power, the peroxy group takes the following position in the ligand series of uranium(VI) complexes:  $CO_3^{2-} \gg O^{2-} \gg OO^{2-} \gg OH^- \gg F^- \gg C_2O_4^{2-}$ , etc. The peroxy complexes of uranyl which have been synthesized are listed in Table 2. Six types of peroxy complexes of uranyl were suggested: An analogy was found to exist between the properties of peroxy uranyl complexes and uranyl carbonate complexes.

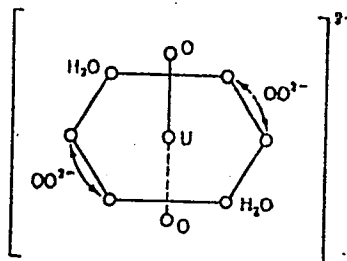
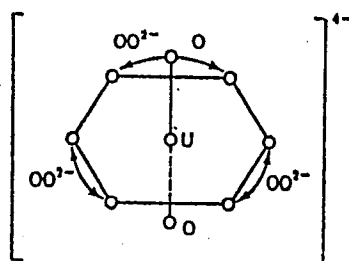
Card 1/8

21336

The complex nature of peroxy-uranyl ...

S/078/61/006/004/007/018  
B121/B216

The following formulas were suggested for the aquo-peroxy-uranyl compounds of the hexaacido-, tetraacido- and pentaacido types:



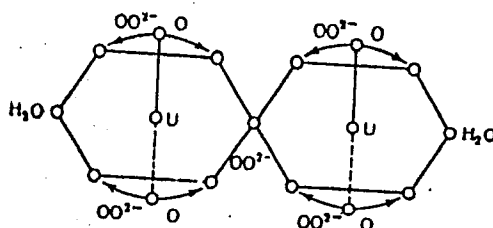
Card 2/4



21336

The complex nature of peroxy-uranyl ...

S/078/61/006/004/007/018  
B121/B216



The most readily accessible of the peroxy compounds is the triperoxy-uranyl complex. This complex contains the maximum number of coordinate peroxy groups. A study of the solubility of sodium triperoxy-uranyl in NaOH and HNO<sub>3</sub> at 25°C showed that the solubility increases with an increase in the acidity of the solution and decreases with increasing alkalinity or with increasing concentrations of NaNO<sub>3</sub> and CH<sub>3</sub>COONa

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21338

The complex nature of peroxy-uranyl ...

S/078/61/006/004/007/018  
B121/B216

(Figs. 6, 7, 8). A potassium triperoxy-uranyl hydrate  $K_4[UO_2(OO)_3] \cdot xH_2O$  crystallizes from solution in the form of greenish-yellow octahedral crystals. This compound is less stable than the corresponding sodium or ammonium compounds. The octahydrate of rubidium triperoxy-uranyl  $Rb_4[UO_2(OO)_3] \cdot 8H_2O$  forms green lenticular crystals. Guanidinium triperoxy-uranyl  $(CN_3H_6)_4[UO_2(OO)_3]$  is the most stable peroxy complex compound. The corresponding calcium- and barium salts  $M_2^{2+}[UO_2(OO)_3] \cdot xH_2O$  were obtained by exchange reaction between potassium triperoxy uranyl and soluble calcium and barium salts. There are 8 figures, 2 tables, and 24 references: 11 Soviet-bloc and 13 non-Soviet-bloc.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov, Academy of Sciences USSR)

SUBMITTED: March 4, 1961

Card 4/84

CHERNYAYEV, I.I.; MOLODKIN, A.K.

Hexaamminocobalt (III) pentacarbonatothorate (IV),  $[\text{Co}(\text{NH}_3)_6]$   
 $2\text{Th}(\text{CO}_3)_5 \cdot \text{nH}_2\text{O}$ . Zhur.neorg.khim. 6 no.4:809-815 Ap '61.  
(MIRA 14:4)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova  
AN SSSR.  
(Cobalt compounds) (Thorium compounds)

CHERNYAYEV, I.I.; ORLOVA, V.S.

Platinum iodopentammines. Zhur.neorg.khim. 6 no.6:1272-1280  
Je '61. (MIRA 14:11)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova  
AN SSSR.

(Platinum compounds) (Ammines)

CHERNYAYEV, I.I.; NAZAROVA, L.A.; MIRONOVA, A.S.

Potassium hexanitroplatinate. Zhur.neorg.khim. 6 no.11:2444-2450  
'61. (MIRA 14:10)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova  
AN SSSR.

(Platinum compounds)

CHERNYAYEV, I.I.; NOVOZHENYUK, Z.M.

Nitrosulfite compounds of trivalent iridium. Zhur.neorg.khim. 6  
no.11:2462-2469 '61. (MIRA 14:10)  
(Iridium compounds)

CHERNYAYEV, I.I.; ZHELIGOVSKAYA, N.N.; BABKOV, A.V.

Investigating the properties of a cyano group in compounds with  
bivalent platinum. Zhur.neorg.khim. 6 no.12:2627-2634 D '61.  
(MIRA 14:12)

(Platinum compounds) (Cyano group)

CHERNYAYEV, I. I.

"On acetates and formates of low-frequency rhodium"

Report submitted but not presented at the 7<sup>th</sup> International  
conference on Coordination Chemistry, Stockholm/Uppsala, Sweden, 25-29 June 62

Akad. Nauk, Moscow



CHERNYAYEV, I.I.; ZHELIGOVSKAYA, N.N.; KANTER, T.M.; BEZZUBENKO, A.A.

Possibility of transeffects in complex compounds of bivalent copper.  
Zhur.neorg.khim. 7 no.3:472-478 Mr '62. (MIRA 15:3)  
(Copper compounds)

CHERNYAYEV, I.I.; ADRIANOVA, O.N.; LEYTES, N.Sh.

Optical activity of platinum (IV) triamines. Zhur.neorg.khim. 7  
no.4:749-755 Ap '62. (MIRA 15:4)  
(Platinum compounds—Optical properties) (Triamine)

CHERNYAYEV, I.I.; KUZNETSOV, N.T.

Mixed iodopentamines of platinum. Zhur.neorg.khim. 7 no.4:756-  
761 Ap '62. (MIRA 15:4)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova  
AN SSSR.

(Platinum compounds) (Amines)

CHERNYAYEV, I.I.; KUZNETSOV, N.T.

Acid-base properties of ethylenediamine-ammonia platinum pentamines.  
Zhur.neorg.khim. 7 no.4:762-768 Ap '62. (MIRA 15:4)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova  
AN SSSR.

(Platinum compounds) (Amines) (Ethylenediamine)

KURNAKOV, Nikolay Semenovitch; CHERNYAYEV, I.I., akademik, otv. red.;  
ZVYAGINTSEV, O.Ye., doktor khim. nauk, otv. red.; BOGUSH,  
O.F., red.; BELOVA, V.I., red.; SIMKINA, G.S., tekhn. red.

[Works on the chemistry of complex compounds] Trudy po khimii  
kompleksnykh soedinenii. Moskva, Izd-vo Akad.nauk SSSR,  
1963. 154 p. (MIRA 16:4)

(Complex compounds)

CHEERNYAYEV, I.I., akademik, red.; RAZUVAYEV, G.A., red.; VOL'NOV,  
I.I., kand. khim. nauk, red.; DOBRYNINA, T.A., kand. khim.  
nauk, red.; DRAGUNOV, E.S., red. izd-va; MAKUNI, Ye.V., tekhn.  
red.

[Chemistry of peroxide compounds] Khimiia perekisnykh soedi-  
nenii. Moskva, Izd-vo AN SSSR, 1963. 313 p. (MIRA 16:12)

1. Akademiya nauk SSSR. Institut obshchei i neorganicheskoy  
khimii. 2. Chlen-korrespondent AN SSSR (for Razuvayev).  
(Peroxides)

MURAVEYSKAYA, G.S.; CHERNYAYEV, I.I.; SOROKINA, V.F.

Nitration reaction of complex iridium chlorides. Zhur.neorg.khim. 8  
no.3:578-582 Mr '63. (MIRA 16:4)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN  
SSSR.

(Iridium compounds)

(Nitration)

MURAVEYSKAYA, G.S.; CHERNYAYEV, I.I.; SOROKINA, V.F.

Potassium trinitritrichloroiridite  $K_3Ir(NO_2)_3Cl_3$ . Zhur.neorg.khim. 8  
no.3:583-589 Mr '63. (MIRA 16:4)

1. Institut obshchey i neorganicheskoy khimii N.S.Kurnakova AN SSSR.  
(Iridium compounds)



MURAVEYSKAYA, G.S.; CHERNYAYEV, I.I.; SOROKINA, V.F.

Polymerism of nitrochloroaquohydroxo compounds of trivalent iridium. Zhur.neorg.khim. 8 no.4:847-852 Ap '63. (MIRA 16:3)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

(Iridium compounds)

CHERNYAYEV, I.I.; BABKOV, A.V.; ZHELIGOVSKAYA, N.N.

Synthesis and properties of dicyanoethylenediamineplatinum.  
Zhur. neorg. khim. 8 no.6:1355-1360 Je '63. (MIRA 16:6)

(Platinum compounds)  
(Ethylenediamine)

CHERNYAYEV, I.I.; SHCHELOKOV, R.N.

Complex uranyl oxalato-halo compounds of the pentaacido  
series. Zhur. neorg. khim. 8 no.6:1530-1531 Je '63.

(MIRA 16:6)

1. Institut obshchey i neorganicheskoy khimii imeni Kurnakova,  
AN SSSR.

(Uranyl compounds)

L 13507-63

EWT(m)/BDS ESD-3 RM

ACCESSION NR: AP3003472

S/0078/63/008/007/1584/1593

56

AUTHOR: Chernyayev, I. I.; Ellert, G. V.; Shubochkin, L. K.; Shchelokov, R. N.

TITLE: Uranyl sulfato-fluoride complex compounds.

SOURCE: Zhurnal neorganicheskoy khimii, v. 8, no. 7, 1963, 1584-1593

TOPIC TAGS: Uranyl, uranyl sulfate, uranyl fluoride, uranyl complex

ABSTRACT: Based on coordination theory, the new compounds which are shown in the enclosure were predicted and synthesized. They are a heretofore-unknown class of uranyl sulfato-fluoride complexes. Their properties, the electric conductivity and pH of aqueous solutions in particular, were analyzed. An aqueous solution of uranyl sulfate was potentiometrically titrated with potassium fluoride, and an aqueous solution of potassium sulfate was potentiometrically titrated with uranyl fluoride. Orig. art. has: 9 figures, 10 tables, 3 equations and 13 formulas.

ASSOCIATION: Institut obschchey i neorganicheskoy khimii im. N. S. Kurnakova, Akademii nauk SSSR (Institute of general and inorganic chemistry, Academy of Sciences, SSSR).

Card 1/3

S/089/63/014/004/007/019  
A066/A126

AUTHOR: Chernyayev, I.I., Ellert, G.V.

TITLE: The complexing reaction in the chemical technology of uranium

PERIODICAL: Atomnaya energiya, v. 14, no. 4, 1963, 383 - 394

TEXT: The complexing reactions employed in the basic technological processes of the chemical treatment of uraniferous materials are studied on the basis of modern data on coordination compounds of uranium. Comprehensive investigations of almost all techniques of uranium processing show that the overwhelming majority of the reactions accompanying the dissolution of uranium compounds, the precipitation of uranyl salts, and extraction processes form complexes of uranium. The mechanisms of a number of dissolution, precipitation, and extraction processes of uranyl compounds are studied. The discovery of new complexes with properties important in practice and of new, more efficient extracting agents among the organofluorine compounds is discussed.

SUBMITTED: May 19, 1962

Card 1/1

CHERNYAYEV, I.I.; SHCHELOKOV, R.N.

Complex hydroxy oxalates of uranyl of the pentaacido series.  
Zhur. neorg. khim. 8 no.8:1990-1991 Ag '63. (MIRA 16:8)

1. Institut obshchey i neorganicheskoy khimii imeni N.S. Kurnakova  
AN SSSR.

(Uranyl compounds) (Oxalates)

CHERNYAYEV, I.I.; NAZAROVA, L.A.

On the report by Griffith, Lewis and Wilkinson "Study of the complex compounds of transition metals with nitrogen oxide."  
Reviewed by I.I. Chernyaev, L.A. Nazarova. Zhur. neorg. khim. 8, no.8:2013-2014 Ag '63. (MIRA 16:8)

1. Institut obshchey i neorganicheskoy khimii imeni Kurnakova AN SSSR.

(Transition metal compounds) (Nitrogen oxides)

CHERNYAYEV, I.I., akademik; BABKOV, A.V.

Synthesis of potassium cyanoplatinate. Dokl. AN SSSR 152  
no.4:882-883 O '63. (MIRA 16:11)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.



CHERNYAYEV, I.I.; ELLERT, G.V.; SHCHELOKOV, R.N.; SHUBOCHKIN, L.K.

Interaction of carbonato and fluoro groups in the inner sphere  
of uranyl complexes. Zhur. neorg. khim. 8 no.10:2232-2239 0 '63.  
(MIRA 16:10)

1. Institut obshchey i neorganicheskoy khimii im. N.S. Kurnakova  
AN SSSR.

(Uranyl compounds) (Carbonates) (Fluorides)

CHERNYAYEV, I.I.; BABKOV, A.V.; ZHELIGOVSKAYA, N.N.

Physicochemical properties of oxidized derivatives of  
potassium cyanoplatinite. Zhur. neorg. khim. 8 no.11:2441-  
2446 N '63. (MIRA 17:1)

ORLOVA, V. S.; CHERNYAYEV, I. I.

"Iodinetriammines and tetrammines (CIS) of Pt (IV)."

report presented at 8th Intl Conf, Coordination Chemistry, Vienna, 7-11 Sep 64.

AVTOKRATOVA, T.D.; ANDRIANOVA, O.N.; BABAYEVA, A.V.; BELOVA, V.I.;  
GOLOVNYA, V.A.; DERBISHER, G.V.; MAYOROVA, A.G.; MURAVEYSKAYA,  
G.S.; NAZAROVA, L.A.; NOVOZHENYUK, Z.M.; ORLOVA, V.S.; USHAKOVA,  
N.I.; FEDOROV, I.A.; FILIMONOVA, V.N.; SHENDERETSKAYA, Ye.V.;  
SHUBOCHKINA, Ye.F.; KHANANOVA, E.Ya.; CHERNYAYEV, I.I., akademik,  
otv. red.

[Synthesis of complex compounds of platinum group metals; a  
handbook] Sintez kompleksnykh soedinenii metallov platinovoi  
gruppy; spravochnik. Moskva, Izd-vo "Nauka," 1964. 338 p.  
(MIRA 17:5)

1. Akademiya nauk SSSR. Institut obshchey i neorganicheskoy  
khimii. 2. Institut obshchey i neorganicheskoy khimii AN SSSR  
(for all except Chernyayev).

L 17606-65  
JG/MLK/RM

EWT(m)/EPF(n)-2/EWP(j)/EWP(t)/EWP(b)

Pu-4

LJP(c)

JD/ES/WW/

ACCESSION NR AM4046719

BOOK EXPLOITATION

S/

Chernyayev, I. I. (Academician)

Complex uranium compounds (Kompleksny'ye soyedineniya urana), Moscow, Izd-vo "Nauka", 1964, 488 p. illus., biblio. Encl. slip inserted. 3,000 copies printed. (At head of title: Akad. nauch. SSSR. Institut obshchey i neorganicheskoy khimii im. V. I. Vernadskogo.)

TOPIC TAGS: uranium compound

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Ch. VII. Oxalate compounds of uranyl -- 1

Ch. VIII. Sulfate compounds of uranyl -- 1

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ACCESSION NR AM-046719

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- Ch. X. Chloride, bromide, and iodide compounds of uranyl --
- Ch. XI. Nitrate compounds of uranyl --
- Ch. XII. Rhodanide, cyanate, and cyanide compounds of uranyl --
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L 17606-65

ACCESSION NR AM4046719

SUB CODE: IC

SUBMITTED: 08 MAY 77

NR REF SOV: 204

OTHER: 656

Card 3/3

CHERNYAYEV, I.I.; ZHELIGOVSKAYA, N.N.; LEONOVA, T.N.

Diacyldimethylamino compounds of platinum (II). Zhur. neorg.  
khim. 9 no.2:347-356 F'64. (MIRA 17:2)



CHERNYAYEV, I.I.; ZHELIGOVSKAYA, N.N.; LE TI-K'YEN; KURGANOVICH, D.V.

Some ethylenediamine derivatives of tetravalent platinum.  
Zhur. neorg. khim. 9 no.3:562-568 Mr '64. (MIRA 17:3)

**CHERNYAYEV, I.I.; ZHELIGOVSKAYA, N.N.; LE TI-K'YEN**

Absorption spectra of ethylenediaminedichloro compounds  
of tetravalent platinum. Zhur. neorg. khim. 9 no.3:569-575  
Mr '64. (MIRA 17:3)

CHERNYAYEV, I.I.; BABKOV, A.V.; ZHELIGOVSKAYA, N.N.

Complex compounds of tetravalent platinum containing inner-sphere cyano groups and ethylenediamine. Zhur. neorg. khim. 9 no.3:576-584 Mr '64. (MIRA 17:3)

CHERNYAYEV, I.I.; LEONOVA, T.N.

Mixed (diamine type) thiocyno and cyano compounds of bivalent  
platinum. Zhur. neorg. khim. 9 no.9:2079-2084 S '64.  
(MIRA 17:11)

CHERNYAYEV, I.I.; BABKOV, A.V.

~~Platinocyanhidric acid~~

Platinocyanhidric acid. Zhur. neorg. khim. 9 no.9:2253 S '64.  
(MIRA 17:11)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

CHERNYAYEV, I.I.; BABKOV, A.V.

Amido reaction of diamines of tetravalent platinum. Zhur. neorg.  
khim. 9 no.10:2307-2312 0 '64. (MIRA 17:12)

1. Moskovskiy gosudarstvennyy universitet.

CHEERNYAYEV, I.I.; LEONOVA, T.N.

Oxidation of trans-diacidodimethylamino compounds of bivalent  
platinum. Zhur. neorg. khim. 9 no.11:2540-2546 N '64  
(MIRA 18:1)

CHERNYAYEV, I.I.; MURAVEYSKAYA, G.S.; KORABLINA, L.S.

Effects of light on the inner-sphere reactions of Pt(IV)  
Halonitrodiammines. Zhur. neorg. khim. 10 no.3:733-735  
Mr '65. (MIRA 18:7)



CHERNYAYEV, I.I.; BABKOV, A.V.

Properties of cyano compounds of tetravalent platinum. Zhur.neorg.  
khim. 10 no.4:802-814 Ap '65. (MIRA 18:6)

1. Moskovskiy gosudarstvennyy universitet.

CHERNYAYEV, I.I.; KORABLINA, L.S.; MURAVEYSKAYA, G.S.

Cleavage and photochemical isomerization of asymmetric platinum (IV)  
cis-diamines. Zhur. neorg. khim. 10 no.5:1045-1050 My '65.  
(MIRA 18:6)

CHERNYAYEV, I.I.; FEDOTOVA, T.N.; ADRIANOVA, G.N.

Rotatory dispersion of mirror isomers  $\text{EnNH}_2\text{ClNH}_2\text{CIPSO}_2$ .  
Zhur. neorg. khim. 10 no.7:1541-1549 51 '65.

(MIRA 18:8)

PALKIN, V.A.; KUZ'MINA, N.N.; CHERNYAYEV, I.I.

Heat capacities of nitrochloride compounds of bivalent platinum.  
Zhur. neorg. khim. 10 no.1:49-52 Ja '65. (MIRA 18:11)

1. Submitted May 28, 1964.

CHERNYAYEV, I.I.; SHENDERETSKAYA, Ye.V.; MAYOROVA, A.G.; KORYAGINA, A.A.

Rhodium formate compounds. Zhur. neorg. khim. 10 no. 2:  
537-579 F '65. (MIRA 18:11)

1. Submitted July 20, 1964.

NAZAROVA, L.A.; CHERNYAYEV, I.I.; MOROZOVA, A.S.

Rhodium acetate compounds. Zhur. neorg. khim. 10 no.2:539-  
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Disturbing Effect from 3-Phase power-transmission lines on Telecommunication Lines.

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"Electrodynamic Models at the TVN LPI Laboratory (High-voltage Laboratory of the Leningrad Polytechnic Institute) for Investigating Stability and Internal Over-voltage in Long-distance Electric Transmission," with Gruzdev, I. A., Levinshtyen, M. L., and Shcherbachev, O. V. p. 201

"Measurement of Harmonic Composition of Currents and Voltages in 110-kv and 220-kv Networks of Lenenergo (Leningrad Electric Power System)" p. 631

High Voltage Technique, Moscow, Gosenergoizdat, 1958, 664pp  
(Series: Its Trudy, No. 135)

This collection of articles sums up the principal results of investigations and studies made by Prof. A. A. Gorev, Dr. Tech. Sci., and his staff in the field of high voltage phenomena and techniques at LPI (Leningrad Polytech Inst.) It was at this institute that Prof. Gorev completed his higher scientific education and then taught and carried on his investigations in the field until his death in 1953. In 1956, by decree of Min of Higher Education, the High-Voltage Lab. at LPI was named after A. A. Gorev.



8(6)

SOV/112-59-5-8851

Translation from: Referativnyy zhurnal. Elektrotehnika, 1959, Nr 5, p 62 (USSR)

AUTHOR: Polovoy, I. F., and Chernyayev, I. V.

TITLE: Harmonic Contents of Currents and Voltages Measured in 110- and 220-kv  
Lenenergo Lines

PERIODICAL: Tr. Leningr. politekhn. in-ta, 1958, Nr 195, pp 631-647

ABSTRACT: Each harmonic, from the first to the 25th, of phase-to-neutral voltages, of transmission-line phase currents, and of the currents in power-transformer neutral, under normal conditions in 110- and 220-kv systems, was singled out by means of special resonant filters and recorded oscillographically. Measurements were made by instrument current and voltage transformers. Preliminary experiments revealed that TFN and TFND 300/5 and 600/5 amp current transformers do not change their ratios at frequencies up to 1,250 cps and do not distort the harmonics. Measurement results showed that medium high harmonics (5th-13th) in the phase-to-neutral voltages contain a noise-

Card 1/2

SOV/112-59-5-8851  
Harmonic Contents of Currents and Voltages Measured in 110- and 220-kv . . . .  
producing component commensurable with that of the first harmonic. The ratio of the noise-producing value to the effective value for phase currents in the transmission line was 0.35-2%, and for phase-to-neutral voltages was 0.3-0.5%; this fact showed that the transmission-line capacitances play an important role in the formation of higher current harmonics. Over 40 measurements were taken in power-transformer neutrals. In the 110-kv network, the effective current value in the transformer neutral was 114-573 ma; the ratio of noise-producing value to the effective value was within 4-33%. In the 220-kv network, these values were 900-3,300 ma and 2.5-19% respectively. Measurement results are tabulated in detail.

I.F.P.

Card 2/2

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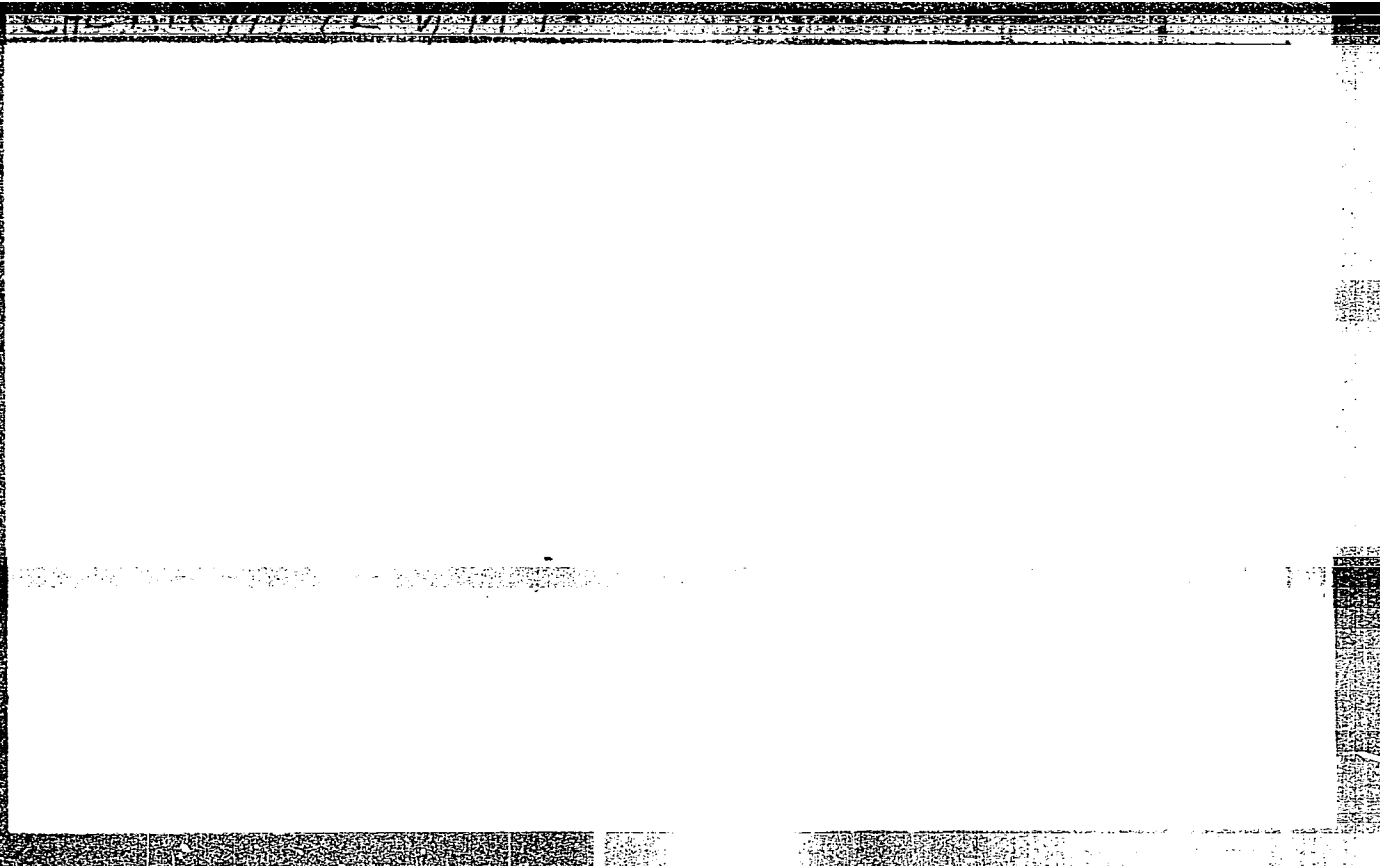
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